TRIUMPHAL ARCHES AT MANCHESTER.

The appearance of Manchester during the late visit of her Majesty and Prince Albert is described as being very satisfactory. The following description of some of the triumphal arches that were erected has been sent to us. The arch in front of the Exchange was designed by Mr. Shorland. It stood at a distance of 12 feet from the door at which her Majesty entered the building; and in her approach thereto she necessarily passed under its central portion. It consisted of three principal parts, as is usual with such edifices. Four square pillars formed its upright portions. On the two outside ones stood vases of natural flowers: flat ornamental beams connected the two outside pillars with the two interior ones: from the tops of the two interior pillars ascended an arch of ironwork; and adorning and covering this were various devices in evergreens and flowers. On the summits of the interior pillars stood shields and banners; and crowning the central arch appeared a wreath of flowers, with the royal crown in its interior. Floral festoons depended from the arch in the centre; and under these, from Market-street, were visible the Queen's arms, surmounting the door of the Exchange.

The Albert-bridge had a triumphal arch, which presented the appearance of a massive stone structure, in the most florid Italian style. It consisted of a centre circular-headed arch, and two square side entrances. Over the keystone of the arch in each façade was an architectural shield, inclosing an oval medallion, upon which were blasoned on one façade the arms of Manchester, and on the other those of Salford. In the centre of the pediment, in one façade was the word "Victoria," and in the other "Albert." The pediment itself was surmounted by the royal arms. Over all was a flagstaff, from which floated the royal standard. The whole structure was richly ornamented with garlands and festoons of flowers, crowns, lions' heads, vases of flowers, enriched scrolls, and brackets.

Her Majesty entered Salford through an erection of the same description at the end of Cross-lane. This was in the Italian style. It was 90 feet wide and 65 feet high, exclusive of the staff bearing the royal standard. The basement consisted of a centre arch, on each side of which there was a rustic arch, intended for the use of equestrians. Beyond, over the footpaths, were rustic arches. On the top was a large crown, and above this floated the royal standard. There was an upper arch, in the centre of which was placed a colossal figure of Britannia. Upon the cornice, over the extreme side arches, were the lion and unicorn, of large size; and there were several large ornamental vases and groupings of flags. The finishing of the arch was in imitation of marble, with gilt bases and capitals to the columns.

METROPOLITAN COMMISSION OF SEWERS.

A new commission has just issued under the Act passed at the close of last session for reforming the body to whom was entrusted the administration of the Sewers Acts. The new body consists of a chairman, a deputy chairman, and nine commissioners; but the powers possessed by the whole body can be exercised by any two commissioners, it being necessary, however, that all acts relating to the disposal of funds, concluding contracts, and striking rates, are to receive the sanction of the chairman himself. The following gentlemen are named in the commission:—Edward Lawes, Esq., chairman; S. M. Peto, Esq., M.P. deputy chairman; Sir John Burgoyne, K.C.B., Thomas Allason, Esq., William Cubitt, Esq., C.E., Captain Dawson, R.E., Captain Harness, R.E., Thomas Hawes, Esq., J. M. Rendell, Esq., C.E., R. Stephenson, Esq., M.P., and Captain Vetch, R.E. Lord Ebrington, Sir Henry de la Beche, and Mr. Philip Hardwick have retired from the commission. The new commissioners are Mr. William Cubitt, the engineer, and Mr. Thomas Allason, the architect.——On Tuesday last a special court was held under the new commission at Greek-street, the new commissioners being amongst those present. The Commission was read, the commissioners all standing; and it was afterwards resolved unanimously to refer the consideration of the establishment and its expenses to a committee, and in the mean time to appoint Messrs. Woolrych, Foster, Hatton, Coggin, Lavers, J. Pollard, and P. Pollard, during the pleasure of the Court, and the remaining officers for one month.

THUNDERSTORMS AND THUNDER.

On perusing "Cosmos," that beautiful work of the great Humboldt, I find myself fortified in the theories of thunderstorms, water-spouts, the aurora borealis, as well as sound, recently explained in The Builder. Respecting the existence of positive electricity in the higher regions, of negative electricity in the earth and in the water, the accumulation of the former in the clouds, and the conducting upwards of the latter by elevated objects on land or at sea for the production of thunderstorms, the following extracts will perhaps be interesting to your readers:—

"When, upon the whole, where the ocean of the air rests upon a fluid bottom, the electric balance is more rarely disturbed than in the air on land, it is the more striking to see how, in extensive seas, small groups of islands influence the state of the atmosphere, and cause the formation of thunderstorms."

In this instance, the islands not only send up their own electricity in greater abundance than the sea, but serve also as conductors to the electricity of the surrounding waters.

On volcanic thunderstorms Von Humboldt says:—

"The hot steam (from the waters that may have found their way into the interior) that rises during the eruption from the crater, and emerges into the atmosphere, will, when cooling, form a cloud, by which the column of ashes and fire, many thousand feet high, is surrounded. Lightning, in winding motion, flashes from the column, and then the rolling thunder of the volcanic thunderstorm may be clearly distinguished from the cracking within the volcano. The lightning striking down from the volcanic steam-cloud killed eleven horses and two men in Iceland on the 17th October, 1755."

Wherever there is a developement of heat on land or on the sea, there is also a proportionate liberation of negative electricity, but it ceases when the atmosphere is too cold to allow its escape. Some places, however, seem to possess less electricity than others.

"In the geographical distribution of thunderstorms (in the words of Humboldt), the Peruvian coast-land, in which it never lightens or thunders, offers the most striking contrast to the whole of the other parts of the tropics, in which, at certain times of the year, thunderstorms are formed every day, from four to five hours after the culmination of the sun."

The coastland of Peru, though it possesses many valleys, is mostly arid and covered with sands and deserts, and these are, no doubt, unfavourable for harbouring and emitting the electricity of the earth, whilst that of the valleys may not be sufficient for the production of thunderstorms. It may be also, though it seems to me less likely, that the chain of mountains, the Andes, running parallel with the coast, and at no very great distance from it, down to Chili, is so powerful a conductor as to attract the electricity of the coastland as soon as it has been liberated from the earth.

In either case, however, there are no two electricities to meet there in the atmosphere, and consequently no lightning or thunder can take place.

Lightning may take place without thunder, where the amalgamation of the two electric fluids happens in the upper, highly rarefied, regions of the atmosphere, as in the case of sheet-lightning and the aurora borealis, though it is said by a few, that the latter is sometimes accompanied by a crackling noise, which may be accounted for by the electric sparks coming on these occasions more or less in contact with the denser, and to us nearer, part of the atmosphere.

Thunder itself can only take place where an electric cloud, or clouds, have been forming; the electric flashes are, as it were, extraordinary vibrations, quick and sharp, long or short, sometimes near, sometimes far away; and as substances give quality to sound (*vide* The Builder of 23rd August), so the cloud or clouds give quality to the vibration communicated to the air: they are the sounding-boards, undulating and elastic, dense or light, high or low, that reverberate to us the thunder of the Almighty, accompanied perhaps by a succession of echoes of the clouds. To those who may happen to be near one of the exploding flashes, the vibrating peal will, of course, be more perceptible than to others at a greater distance.

With the subterranean thunder of volcanoes or of earthquakes it is the same. Sound travels farthest and loudest at the surface of the air, particularly where it rests on smooth or polished substances; and thus, the quality of subterranean shocks, according to the materials in labour, being imparted to the air, either by direct or indirect contact, the sound is propagated to enormous distances, according to the face of the ground of the country. The earth is the sounding-board of the vibrations caused at certain places and there first communicated to the air, like the vibrations caused by the rolling of a waggon.

"I have minutely ascertained (says Humboldt), that the great shock at the earthquake of Riobamba (4th February, 1797)—one of the most terrible phenomena of the physical history of our earth—was unaccompanied by any noise."

This shows, in my humble opinion, that, in the first instance, the vibrations of the heaving materials below came not in contact with the air at that place, though it must have been so, direct or indirect, at a great distance, where 18 to 20 minutes *after* the actual catastrophe a great subterranean noise was heard; and how, in the second instance, shocks of earthquakes may take place without subterranean noise, and how subterranean noise may be heard unaccompanied by any shock.

W. Adolph.

THE ORDNANCE SURVEYS.

I beg leave once more to trouble you—I hope for the last time—on the subject of Ordnance surveying. I find a communication signed "W. M.," in your publication of the 20th Sept. referring to an article which appeared on the 30th Aug. signed by me. I would wish "W. M.," and every other person who may read that article, to understand that what I stated was not a mere philippic to bring the ordnance survey of Ireland into disrepute; but a statement of *facts*, to which I still adhere, and am prepared to prove, which show that a survey such as the ordnance survey of Ireland would not be beneficial to the people of Scotland or any other country.

Does your correspondent disprove my facts? He refers to them, but I deny that he refutes them; neither does he bring forward any counter statements. The evil being consummated in Ireland, as a matter of course the Ordnance still continue to issue their maps; but what has that to do with my letter of the 30th? Did I state anything to the contrary? I first attempted to draw the attention of the public and the profession to the fact that the survey was not correct enough for civil purposes, and this I adhere to; and next, to the fact that there were a class of men in Dublin who were making large sums of money by furnishing the public with maps of estates, enlarged or copied from the Ordnance survey, the areas of which *they compute* from the paper. "W. M." says, no honest surveyor would profess to compute areas from it, and I agree with him. I know not what they profess, but he, as a surveyor, must be aware of who commenced it.

"W. M." further states, that at the commencement of the survey in the north it was designed to be of a nature to admit of the hills being shaded, &c. Now I do not know what they may have designed, but this I do know, that, with the exception of one parish, such a thing was never published.

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